

## REMARKS

### I. PENDING CLAIMS AND SUPPORT FOR AMENDMENTS

Upon entry of this amendment, claims 1-13 and 15-20 will be pending in this application. Applicant has amended claim 1 to recite that the contact time to achieve dissolution of nylon in solvent system is less than 45 minutes. Support for this can be found in the specification at page 9. New claims 18-20 are supported by the same portion of the specification. No new matter has been added.

### II. NON-ENTRY OF AMENDMENT

At page 2 of the Advisory action dated December 31, 2003, the Examiner refuses entry of Applicant's Amendment filed on December 5, 2003, alleging that the Amendment raises new issues because newly added claim 17 is a duplicate of claim 10. Since this amendment has now been entered as the result of the filing of an RCE, Applicant notes that the Examiner is precluded from making the next action in this application final.

Moreover, for the record, Applicant notes that there is a difference in scope between claim 17 and claim 10, so that the claims are not duplicates. More specifically, claim 17 recites that the contacting pressure higher than the equilibrium vapor pressure of the solvent at the dissolution temperature is obtained by either introducing an inert gas into the reactor, increasing the pressure head of solvent entering the reactor, or both. These methods of increasing pressure are not recited in claim 10 or in claim 1, from which claim 10 depends.

### III. ANTICIPATION REJECTION OVER YANG

The Examiner has previously rejected claims 1-10 and 14-16 under 35 U.S.C. § 102(e) over Yang (U.S. Patent No. 6,036,726). Applicant traverses this rejection and requests that it not be repeated in this RCE.

The Examiner has taken the position that Yang discloses dissolution using combinations of temperature and pressure that correspond to those disclosed and claimed by Applicant in dependent claims. The Examiner reasons that, because these quantities overlap, the process described in Yang must meet Applicant's claimed limitation that the dissolution pressure be higher than the equilibrium pressure of the alkanol solvent at the elevated temperature.

There are several problems with the Examiner's reasoning. First, the notion that any of the so-called "examples" in Yang et al. could anticipate anything is incorrect. Beginning with Example 1, Yang et al. make clear that the description therein is completely speculative, rather than a description of a process that was actually carried out. For instance, Yang et al. describe adding activated carbon to the solution in amounts ranging from 0.0001 to 100% of the total estimated weight of nylon in solution. Yang et al. describe contact time with the activated carbon ranging from 0.1 to 120 minutes. Yang et al. use language indicating that the activated carbon "will be separated" from the mixture, and state that "upon cooling to below 140 °C and the removal of any pressure, substantially decolored nylon 6,6 will precipitate" from the solution (emphasis added). The recitation of widely varying ranges for amounts of materials and the use of language other than the past tense both indicate that the example described was never actually carried out. The Examiner is invited to

cite any case law of which she may be aware that supports the proposition that speculative examples citing widely varying possibilities for important parameters is a sufficiently specific embodiment for an anticipation rejection.

Second, the recitation of various temperatures and pressures in Yang et al. that fall within ranges of different claims presented by Applicant is not an indication that Yang et al. teaches or discloses, either explicitly or inherently, the use of a dissolution pressure higher than the equilibrium pressure of the solvent system at a given temperature. When a liquid is in equilibrium with its vapor at a given temperature, the pressure in the system is the equilibrium vapor pressure of the system at that temperature. If the pressure on the system is changed, equilibrium will be disturbed, and the system will adjust to reach a new equilibrium. However, if composition is fixed, a change in pressure will result in the system adjusting its temperature to achieve a new equilibrium, because of restrictions on the number of degrees of freedom available to the system.

Thus, the mere recitation of a range of values for temperature and/or pressure is no indication that the pressure is above the equilibrium vapor pressure of the solvent system. In fact, as Applicant has repeatedly explained, a more likely explanation is that the system in Yang et al., if it were actually prepared, would be at the equilibrium vapor pressure of the solvent, not above it as recited by the claims.

Third, Applicant takes issue with the Examiner's attempt to use Applicant's own disclosure and claims to bootstrap her anticipation rejection. The claims and specification recite that, first, the dissolution pressure must be above the equilibrium vapor pressure of the solvent at the dissolution temperature. Once this has been

satisfied, the dependent claims specify ranges for pressure (claim 9) and ranges for temperature (claim 10). It simply does not follow that any recitation of a combination of temperature from within the range of claim 10 and pressure from within the range of claim 9 inherently satisfies the limitations of claim 1. Whether a particular pressure is above the equilibrium vapor pressure of the solvent at a particular temperature will depend on the solvent composition. Neither the disclosure of Yang et al. nor the dependent claim limitations to which the Examiner points provide any indication that the process of Yang et al. is operated at such a pressure, either explicitly or inherently. Certainly there is no teaching in Yang et al. that operating at a pressure above the equilibrium vapor pressure is significant.

Finally, all of the examples of Yang et al. (to the extent that they are not merely prophetic, and to the extent that they recite a single dissolution time) all describe dissolution times of 1 hour and dissolution temperatures of around 160 °C. Claim 1 has been amended to recite that the dissolution time is less than 45 minutes and the dissolution temperature is below 155 °C.

In addition, the Examiner has stated in her Advisory action that Applicant's claims do not recite a source of pressure external to the vapor liquid equilibrium of the solvent. First, this is not the case for claim 17. Second, the Examiner is correct that claim 1 does not recite such a source of pressure. Applicant's argument is simply that without some disclosure of an external source of pressure, the disclosure of Yang et al. cannot reasonably be held to disclose a dissolution pressure higher than the equilibrium vapor pressure of the solvent at the dissolution temperature. Such a reduction in vapor pressure of the mixture could only be obtained by rapidly

decreasing the temperature of the mixture (which does not occur and is not disclosed in Yang et al.) or by applying an external pressure greater than the equilibrium vapor pressure of the mixture, which is also not disclosed in Yang et al.

For at least the reasons described above, Yang et al. fails to anticipate Applicant's claims, and the Examiner's rejection should be withdrawn.

#### IV. OBVIOUSNESS REJECTIONS

##### A. Yang et al. in view of Meyer et al.

The Examiner has rejected claims 10 and 11 under 35 U.S.C. § 103(a) as obvious over Yang et al. in view of Meyer et al. (U.S. Patent No. 4,334,056).

Applicant respectfully traverses this rejection and requests that the rejection not be repeated.

Applicant has previously explained why the disclosures of Meyer et al. and Yang et al. are not properly combinable: Meyer et al. is directed to processing of nylons fundamentally different from those encountered in Yang et al., and in the recycling of nylon in general. The Examiner apparently feels that it is appropriate to select only the teachings from Meyer et al. that support her position. However, it is well established by now that it is inappropriate for the Examiner to take isolated, specific teachings out of context (e.g., the temperatures in Meyer et al.), and combine them with other reference teachings (the process of Yang et al.) without careful consideration of the other teachings in each reference and the effect of these other teachings on the motivation of one of ordinary skill in the art to combine the references. Applicant respectfully submits that, in this case, the wide difference in nylons processed and in the uses to which those nylons are put in the two references

precludes any reasonable expectation that the temperatures used in Meyer et al. would be appropriate for the nylons treated in the process of Yang et al. That the “definition of polyamide” in Yang et al. can be read to encompass nylon 6,10 does not provide one of ordinary skill in this art to combine the temperature limitations of Meyer et al. with the process described in the examples, albeit speculative examples, of Yang et al., all of which are directed to nylon 6,6.

Moreover, as Applicant has previously explained, even if the references were properly combinable, Meyer et al. does not cure the deficiencies of Yang et al., particularly with respect to the failure to teach using a dissolution pressure greater than the equilibrium vapor pressure of the solvent system.

The Examiner’s comment requesting that Applicant provide the location in Yang et al. where fiber degradation is taught misconstrues Applicant’s argument. One of ordinary skill in this art would expect fiber made from recycled material as described in Yang et al. to have less desirable properties than virgin fiber. This results from wear of the fiber, breaking the polymer chains, as well as degradation from exposure to solvents and other materials during the service life of the fiber. Moreover, the recycling process itself would be expected to degrade the fiber; as the Examiner may be aware, numerous references exist to processes for depolymerizing nylon using solvent systems similar to those recited in Yang et al. Applicant’s argument is that, as disclosed in Applicant’s specification, the claimed process not only does not degrade the fibers, as one of ordinary skill in this art would reasonably expect, but instead it produces nylon that, when spun into fiber, has improved properties. In fact, the properties of the fibers are superior to that of virgin nylon

fibers, as explained in the specification. Thus Applicant respectfully requests that the Examiner point out where, in any of the cited references, such an unexpectedly superior result is taught or suggested.

Finally, neither Yang et al. nor Meyer et al. teach or suggest a dissolution contact time of less than 1 hour.

B. Yang et al. in view of Booij et al.

Applicant notes with appreciation the indication at page 8 of the Advisory action that this rejection is withdrawn.

C. Yang et al. in view of Stott et al.

The Examiner has previously rejected claims 12 and 13 as obvious over Yang et al. in view of Stott et al. (U.S. Patent No. 2,742,440). Applicant respectfully requests that this rejection not be repeated.

The Examiner has criticized Applicant for arguing that it would not have been obvious to use an inert gas in the process of Yang et al., despite Stott et al.'s use of inert gas to avoid an oxidizing atmosphere. The Examiner considers that Applicant has not explained why this is so.

What Applicant has explained repeatedly is that (1) Yang et al. does not use a dissolution pressure higher than the equilibrium vapor pressure of the solvent system, (2) this higher pressure results in advantages that are not taught or suggested in either Yang et al. or Stott et al., and (3) one of the ways that Applicant achieves such a higher pressure is by pressurizing the process with an inert gas.

However, there is no need in Applicant's process to exercise "[c]aution during the step of removal of the solvent and storage of the final powder in order not to



oxidize the nylon.” Stott et al. require such caution because they wish to sinter and mold the nylon powder they obtain directly. They state:

The powder itself is unique in that it may be pressed at room temperature into the desired shape, removed from the mold or other shaping device, and sintered by heating it to a temperature below its melting point. . . . While it is probable that the unusable [sic, unusual] characteristics of the powder may be due to the extremely small particle size, it has not been possible to duplicate the molding procedure with powder produced by mechanical grinding. It is also to be observed that the process of dissolving and precipitating the nylon is carried out under non-oxidizing conditions.

Column 2, lines 56-69. Neither Yang et al. nor the present invention require any such careful handling of the nylon resulting from their (in Yang et al.’s case, speculative) processes. Yang et al. describes drying nylon in a forced air oven (column 12, lines 1-3).

The Examiner does not explain why a worker of ordinary skill in the art would adopt the inert gas process of Stott, which is adapted to produce very small particles of nylon that are susceptible to oxidation, and use this inert gas process in the process of Yang et al., which evidently does not produce such susceptible particles of nylon. The Examiner has also not explained why such a worker would ignore the explicit warning of Stott et al. to avoid oxidizing atmospheres around the nylon particles and use the air drying method explicitly disclosed by Yang et al. To select only the portions of Stott et al. that are convenient for formulating a hindsight reconstruction of Applicant’s invention by combining with selected elements of Yang et al. is not appropriate under 35 U.S.C. § 103(a).




Moreover, neither Yang et al. nor Stott et al. disclose a specific dissolution process that is carried out for less than 1 hour, and at temperatures below 159 °C. A worker having ordinary skill in this art would not have been motivated to use lower temperatures, since Stott et al. teach a temperature range of 160 °C to 190 °C, and the Yang et al. temperature in the “examples” cited by the Examiner is similar (159 °C – 171 °C). Considering all of the relevant teachings of both references (assuming arguendo that their combination is appropriate), rather than only those that support the rejection, it is clear that there is no motivation for one of ordinary skill in the art to disregard the teachings of both references and use a lower dissolution temperature.

Applicant submits that the claims are in condition for immediate allowance, and an early notification to this effect is earnestly solicited.

The Commissioner is hereby authorized to charge any deficiencies or credit any overpayment to Deposit Order Account No. 11-0855.

Respectfully submitted,

  
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